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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,500	11/16/2001	Mark Kintis	NGC-197/12-1219	7771

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EXAMINER

TALAPATRA, ANIKA F

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 02/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/991,500

Applicant(s)

KINTIS ET AL. 

Examiner

Anika F. Talapatra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-17 is/are allowed.
- 6) ☒ Claim(s) 1 and 18 is/are rejected.
- 7) ☒ Claim(s) 2-11 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Drawings***

1. The drawings are objected to because in figures 2 and 3, the feedback loop 94 connects element 92 to element 54, wherein the specification describes information being sent from element 92 to element 54. However, there is an arrow towards element 92 as well as towards element 54. The arrow towards element 92 is incorrect and should be removed, because the specification does not describe information being transmitted from element 54 to element 92. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 18 rejected under 35 U.S.C. 102(a) as being unpatentable over Gu (U.S. Patent Application Publication 2003/0072393) (hereafter referred to as Gu) further in view of Betts et al. (U.S. Patent 5396519) (hereafter referred to as Betts).

As to claim 1, Gu teaches a multi-carrier receiver system comprising: a frequency conversion circuit for generating an intermediate frequency (IF) multi-carrier signal based on a transmission frequency multi-carrier signal (Gu, paragraph 32; figure 1a, element 110); a feedforward cancellation element for generating an amplitude corrected multi-carrier signal based on the IF multi-carrier signal, such that the amplitude corrected multi-carrier signal has a reduced dynamic range (Gu, paragraph 52; figure 3, element 320); and a primary analog to digital (A/D) converter for generating a digital multi-carrier signal based on the amplitude corrected multi-carrier signal (paragraph 53, figure 3, elements 304 and 314). Gu does not teach a feedforward cancellation loop. Betts teaches a feedforward cancellation loop (Betts, column 6, lines 56-67; figure 9, element 102). It is well known in the art that a feedforward cancellation loop removes components of the signal to reduce the signal range; thereby whitening noise in the system, or removing other unwanted signal components. Therefore, it would

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have been obvious to one of ordinary skill in the art at the time of the invention to use a feedforward cancellation loop, in the system taught by Gu, in order to reduce the dynamic range of the IF signal, in the system taught by Gu.

As to claim 18, Gu teaches a multi-carrier receiving method comprising: generating an IF multi-carrier signal based on a transmission frequency multi-carrier signal (Gu, paragraph 32; figure 1a, element 110); generating an amplitude corrected multi-carrier signal based on the IF multi-carrier signal, such that the amplitude corrected multi-carrier signal has a reduced dynamic range (paragraph 52; figure 3, element 320); and a primary A/D converter for generating a digital multi-carrier signal based on the amplitude corrected multi-carrier signal (Gu, paragraph 53, figure 3, elements 304 and 314). Gu does not teach a feedforward cancellation loop. Betts teaches a feedforward cancellation loop (Betts, column 6, lines 56-67; figure 9, element 102). It is well known in the art that a feedforward cancellation loop removes components of the signal to reduce the signal range; thereby whitening noise in the system, or removing other unwanted signal components. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a feedforward cancellation loop, in the system taught by Gu, in order to reduce the dynamic range of the IF signal, in the system taught by Gu.

Allowable Subject Matter

3. Claims 2 to 11, and 19, are objected to as being dependent upon a rejected base claims, respectively, 1 and 18, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: A comprehensive search of prior art failed to teach, either alone or in combination, a system and method for a multi-carrier receiver system comprising: a frequency

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conversion circuit for generating an IF multi-carrier signal based on a transmission frequency multi-carrier signal; a feedforward cancellation element for generating an amplitude corrected multi-carrier signal based on the IF multi-carrier signal, such that the amplitude corrected multi-carrier signal has a reduced dynamic range; and a primary A/D converter for generating a digital multi-carrier signal based on the amplitude corrected multi-carrier signal, wherein the feedforward cancellation loop includes: a secondary A/D converter; a level adjustment circuit coupled to the secondary A/D converter; and a digital to analog (D/A) converter for generating an analog cancellation signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Claims 12 to 17 are allowed. The following is an examiner's statement of reasons for allowance: A comprehensive search of prior art failed to teach, either alone or in combination, a system and method for a multi-carrier receiver system comprising a feedforward cancellation element for generating an amplitude corrected multi-carrier signal based on a IF multi-carrier signal, such that the amplitude corrected multi-carrier signal has a reduced dynamic range, wherein the feedforward cancellation loop includes: a secondary A/D converter; a level adjustment circuit coupled to the secondary A/D converter; and a digital to analog (D/A) converter for generating an analog cancellation signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- i. U.S. Patent Application Publication 2002/0048326, Sahlman (figures 2 and 4);
- ii. U.S. Patent 6313703, Wright et al. (figure 3a);
- iii. U.S. Patent Application Publication 2003/0199257, Wilkinson et al.;
- iv. U.S. Patent 5724653, Baker et al.;
- v. U.S. Patent 6700514 Soltanian et al.; and
- vi. Digital Controlled Adaptive Feedforward Amplifier for IMT-2000 Band, Yang et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anika F. Talapatra whose telephone number is 571-272-6039. The examiner can normally be reached on Monday to Friday, 08:00-16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.T.



**KEVIN BURD
PRIMARY EXAMINER**